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COLEMAN, KEITH A

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/549,570  
Filing Date: May 24, 2006  
Appellant(s): CARBONNE ET AL.

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Robert E. Goozner  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 9/8/2008 appealing from the Office action mailed 4/4/2008.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

No amendment after final has been filed.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6138638

Morikawa

10-2001

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 6, 8, 11, 12, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Morikawa (US Patent No. 6,138,638).

With regards to claim 1, the patent to Morikawa discloses a method of synchronizing the injection with the engine phase in an engine (1, Col. 29, Lines 19-23) with electronic injector control (50, Col. 31, Lines 25-30) having n cylinders into which fuel is injected directly into each of the cylinders successively (Col. 31, Lines 24-27, Col. 1, Lines 14-20, n=4) in a predetermined sequence (Col. 31, Lines 24-27), the fuel injection being synchronized with the position of the piston in the corresponding cylinder (Col. 31, Lines 27-40), **the method comprising** the following steps, performed when the engine (1) is started (S22, Col. 40, Lines 25-30, Abstract, Figures 9 and 10) **injecting** fuel into m cylinders in the predetermined injection sequence when the corresponding pistons (Col. 31, Lines 27-40), put into motion by means of a starter (44, Col. 41, Lines 43-45), are at the end of the compression phase (via S3 in Figure 3 using Figure 14, Col. 36, Lines 56-68 through Col. 37, Lines 1-25), m being determined in advance as a function of n (S2, Col. 37, Lines 11-16), - **measuring** engine speed

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(Figure 3, Col. 37, Lines 1-5), **continuing** the injection in the predetermined sequence if the engine speed and/or its acceleration exceed a predetermined threshold (Col. 39, Lines 9-20, Figures 7 and 8, Abstract), the injection being synchronized with the engine phase in this case (Col. 39, Lines 9-20, Figures 7,8,14,15, 22, and 23), **continuing** the injection with a phase change with respect to the preceding injections and with respect to the predetermined sequence (Col. 39, Lines 9-20, Figures 7,8,14,15, 22, and 23), this phase change being a function of  $n$  and  $m$  (Col. 31, Lines 27-40), so that the injection is synchronized with the engine phase, in the contrary case (Col. 39, Lines 9-20, Figures 7,8,14,15, 22, and 23) **wherein the method does not employ a camshaft sensor (See Figures 14 and 15)**. It should be noted that when abnormal conditions occur or predetermined threshold a different routine is executed (Col. 39, Lines 9-20).

With regards to claim 2, the patent to Morikawa discloses the synchronization characterized in that the engine speed is measured after approximately one revolution of the engine (via S3 in Figure 3 using Figure 14, Col. 36, Lines 56-68 through Col. 37, Lines 1-25).

With regards to claims 3 and 8, the patent to Morikawa discloses the synchronization for an engine having an even number of cylinders (Col. 29, Lines 5-20).

With regards to claims 6, 11, and 12, the patent to Morikawa discloses the position of the pistons in the cylinders of the engine is determined by a position sensor

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(39) measuring the angular position of the corresponding engine flywheel. It is noted that the angular displacement of the crankshaft is inherently the same as the engine flywheel.

With regards to claims 4, 9, 10, the patent to Morikawa discloses that a second measurement of the engine speed and/or its acceleration is made after  $p$  further injections,  $p$  being determined in advance as a function of  $n$  and  $m$ , to check that the synchronization is correct. In Figure 14, Morikawa discloses fuel injection signals as a function of time in one cycle i.e. two rotations of the crankshaft. Morikawa further discloses that every 10 milliseconds or any predetermined length of time the fuel injection routine (See Figure 24, Col. 38, Lines 65-67 through Col. 39, Lines 1-4) is executed and explicitly states that the determination of a cylinder, such as a cylinder to be ignited and a cylinder to be injected, is carried out based on the combustion stroke sequence i.e.  $p$  being determined in advance as a function of  $n$  and  $m$ . Referring back to the routine, its purpose is to find abnormalities in the fuel injection system. When  $p=0$  and after 20 milliseconds, Morikawa's routine inherently checks the status of synchronization twice.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 5, 7, 13, 14 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa (US Patent No. 6,138,638)

With regards to claim 5, the patent to Morikawa discloses all the limitations of the claimed subject matter, including varying a predetermined time dependent measurement of the engine speed and its acceleration during two actual revolutions of

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the engine, except does not positively disclose the second measurement of the engine speed and its acceleration is made after two actual revolutions of the engine, in other words after n injections of fuel. Since Morikawa discloses a table (See Figure 15) as a function of both number of injections and time, and explicitly states that a predetermined amount of time can be set for measurement taking, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the predetermined time interval of Morikawa with a time duration of one cycle i.e. 720 degrees, in order to find abnormalities in the fuel system.

With regards to claims 13 and 14, the patent to Morikawa discloses the position of the pistons in the cylinders of the engine is determined by a position sensor (39) measuring the angular position of the corresponding engine flywheel. It is noted that the angular displacement of the crankshaft is inherently the same as the engine flywheel.

With regards to claims 7, 15, 16, 17, 18, and 19, the patent to Morikawa discloses that the dose of fuel injected in the first m injections is smaller than that used in the subsequent injections. In Figure 8, Morikawa discloses that depending on the targeted air-to-fuel ratio, the quantity of fuel dispersed in the cylinders is increased or decreased but does not positively disclose after m injections. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to



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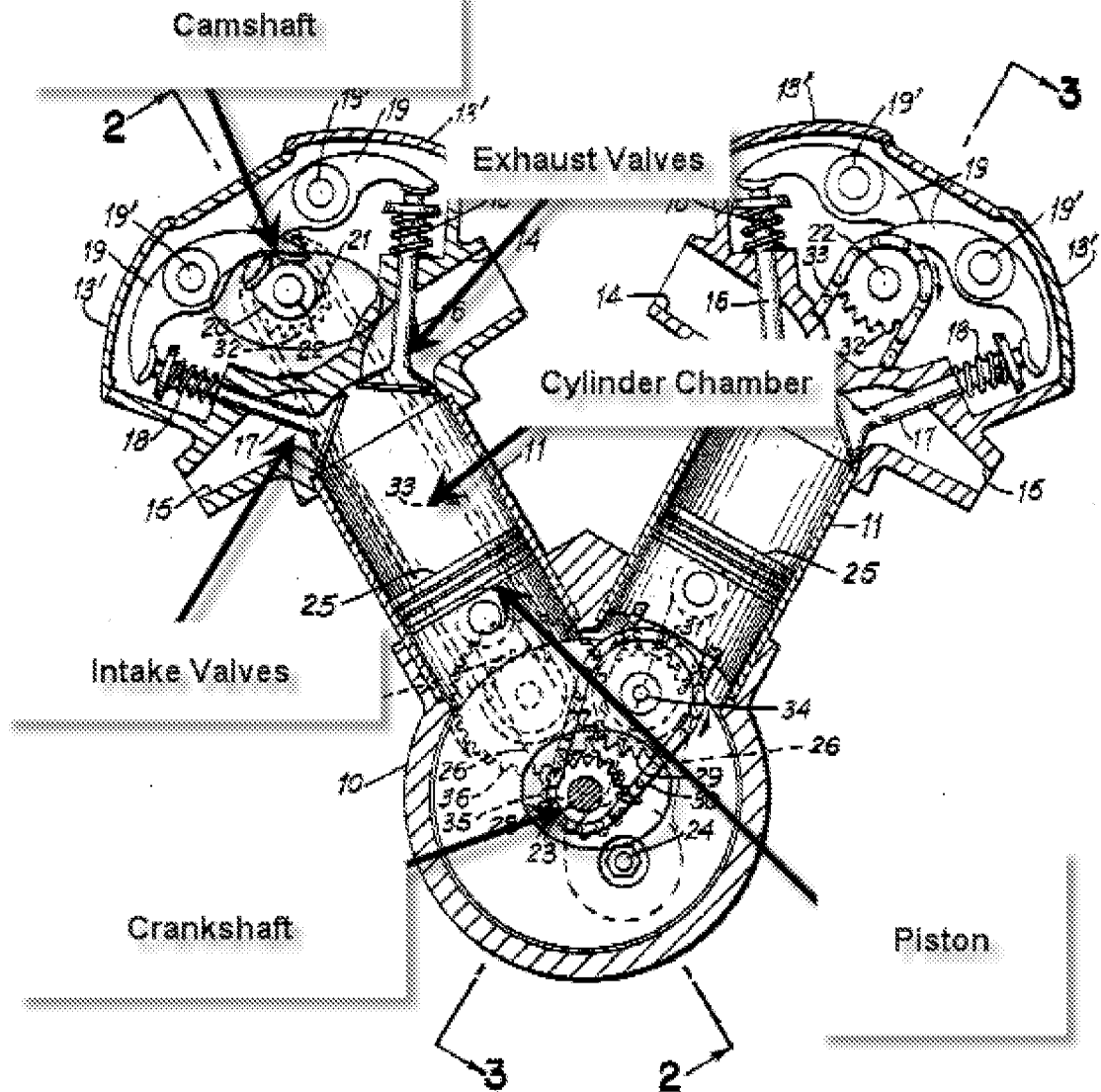
modify the dosage of fuel injected of Morikawa with the injection being after m injections, in order to be within the targeted air-to-fuel ratio.

**(10) Response to Argument**

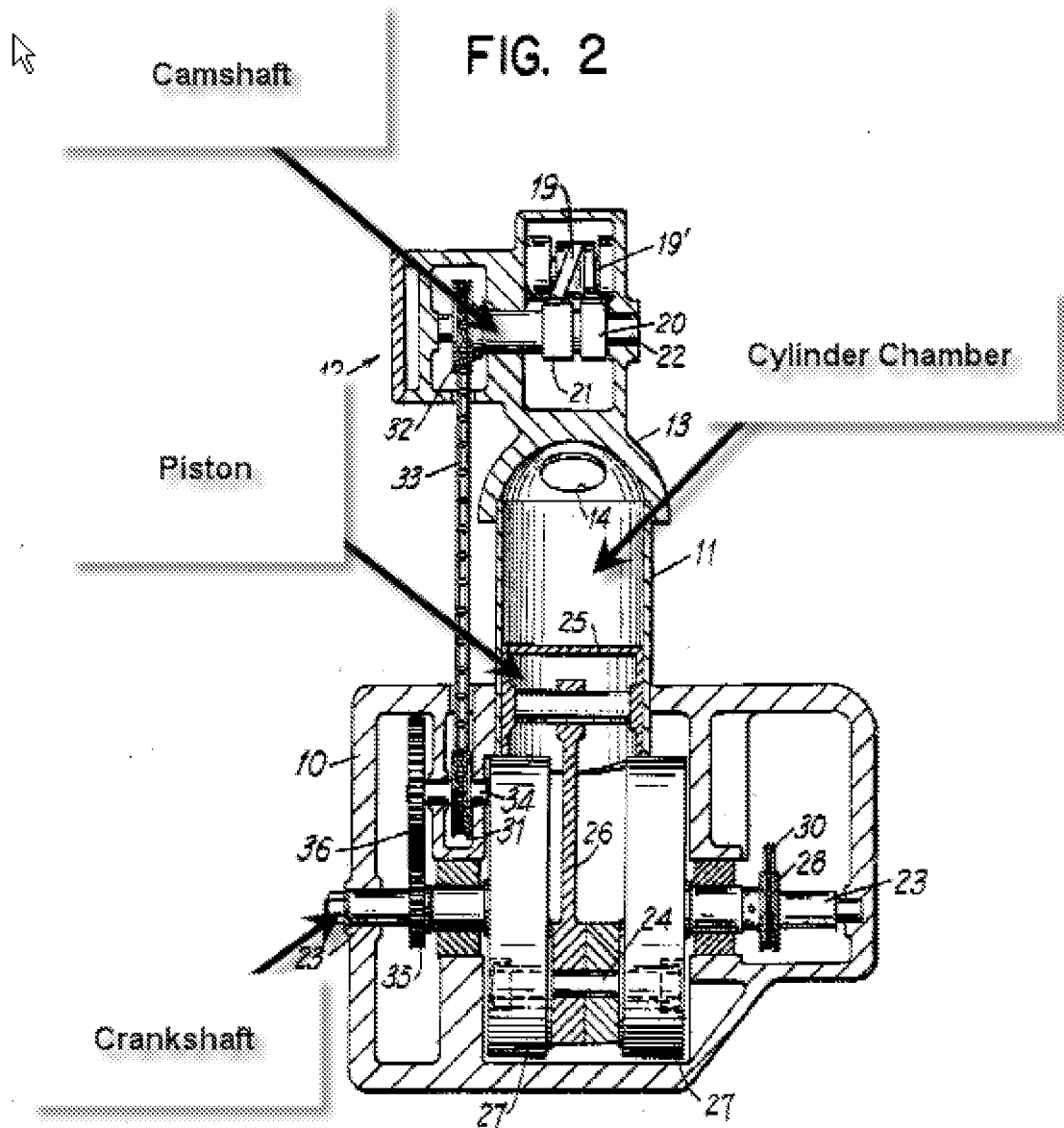
Examiner has provided a prefatory explanation of common components of an internal combustion engine.

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FIG. 1



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#### Listing of Basic Components

**Camshaft:** The camshaft is a rotary shaft which comprises lobes that open and close the intake and exhaust valves in time with the motion of the piston.

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*Crankshaft:* The crankshaft (also known as crank) is a rotary shaft which translates reciprocating linear piston motion into rotation.

*Piston:* In an engine, its purpose is to transfer force from expanding gas in the *cylinder* to the *crankshaft* via a piston rod and/or connecting rod.

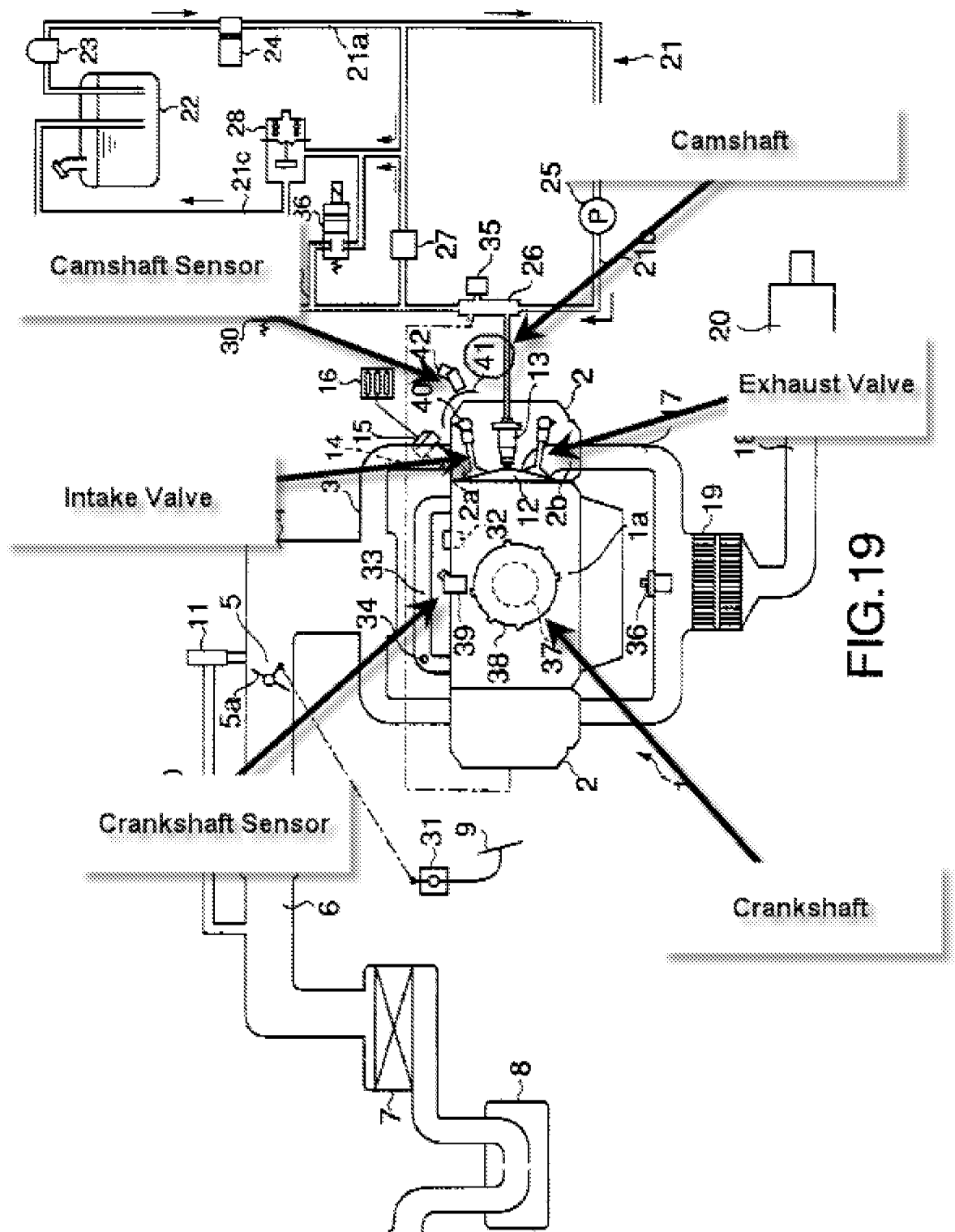
*Connecting Rod:* The connecting rod connects the *piston* to the crank or *crankshaft*.

*Cylinder Chamber:* A cylinder (also known as cylinder chamber) is the central working part of a reciprocating engine, the space in which a *piston* travels.

*Intake Valve:* A valve used to control airflow into the *cylinder chamber* and actuated by the lobes of a *camshaft*.

*Exhaust Valve:* A valve used to control exhaust flow from the *cylinder chamber* and actuated by the lobes of a *camshaft*.

The Figure below shows the structural arrangement of the Morikawa reference.



Examiner's Response to Arguments

Applicant contends on Page 6 that "Morikawa uses a camshaft sensor, and the exact positioning of the engine is known." And further states on Page 7 that "the present invention determines the engine position by test. On the other hand, Morikawa determines the engine position by a basic check of the camshaft sensor output."

As explained in the Final Action, Figures 14 and 15 show crank pulses used to ascertain the position of the engine and speed. Morikawa explicitly states synchronizing the fuel timing without the camshaft sensor as stated on Col. 37, Lines 29-36.

"When no cylinder determining pulse is inputted between the last and current inputs of crank pulses and between the crank pulse input before last and the last crank pulse input, it can be determined that the currently inputted crank pulse is the crank pulse .theta.3 and the next inputted crank pulse is the crank pulse .theta.1."

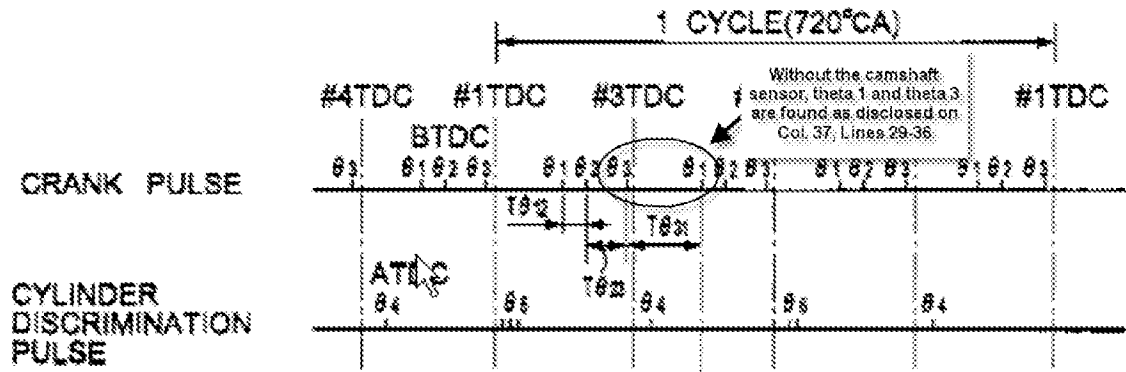
Thus, Morikawa implements the method without the camshaft information, since 'input' is defined as "the current or voltage applied to an electric or electronic circuit or device" or "data to be entered into a computer for processing."

On page 5 of Applicant's Specification, it clearly states "The present invention proposes a method of starting the engine without the "information" provided by the cam sensor." This is the only part of Applicant's specification where the method is clearly defined during start-up operations and using camshaft information.

Examiner has shown in Figure 14 the engine phase where this would take place. If nothing is received from the cylinder determining sensor (i.e. no information in

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accordance to Applicant's specification), Morikawa's ECU continues operations by setting the crank pulse parameter to theta 3 and the next input to theta 1.



As to Applicant's argument on Page 11, Applicant further contends that "accidental results not intended and not appreciated do not constitute anticipation". Applicant is remiss in his argument since there is "no missing descriptive matter" or unintended results.

As stated in *Eibel Processing Co. v. Minnesota and Ontario Paper Co.*, 261 US 45 (1923),

"It is contended on behalf of the defendant that, whether Barrett and Horne perceived the advantage of speeding up the stock to an equality with the wire, yet the necessary effect of their devices was to achieve that result, and therefore their machine anticipated Eibel. In the first place, **we find no evidence that any pitch of the wire, used before Eibel, had brought "about such a result" as that sought by him,** and, in the second place, if it had done so under unusual conditions, accidental results, not intended and not appreciated, do not constitute anticipation."

Here, the courts found **unexpected results** by using an equality of wire to speed up the stock. Since the fact pattern differs significantly and unexpected results are commonly found for 103 rejections set forth in MPEP 2131, this case is not germane to this application.

As to the Mycogen Plant Science case, this case dealt with conception and reduction to practice. Furthermore, the rejection in question only contended a 102(g) rejection.

“The district court's denial of Mycogen's motion for JMOL overturning the jury's verdict of noninfringement **due to patent invalidity pursuant to 35 U.S.C. § 102(g)** is affirmed. Because this decision renders the '600 and '862 patents invalid, we do not address the related appeal of the district court's grant of JMOL that the patents are invalid due to lack of enablement. Similarly, the district court's denial of Mycogen's motion for a new trial based upon inconsistent jury verdicts is affirmed, and the district court's claim construction is also affirmed. Additionally, the correctness of the jury instructions regarding the doctrine of simultaneous conception and reduction to practice is affirmed.”

As for the 103 rejection, Applicant gives a list of court cases in section 7.2 but the crux of all of his arguments are contingent upon the camshaft information. However, as explained above, the synchronization is executed without the camshaft information.

#### **(11) Related Proceeding(s) Appendix**



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No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Keith.Coleman./

Examiner, Art Unit 3747

Conferees:

/Stephen K. Cronin/

Supervisory Patent Examiner, Art Unit 3747

/Greg Vidovich/

TQAS, TC 3700